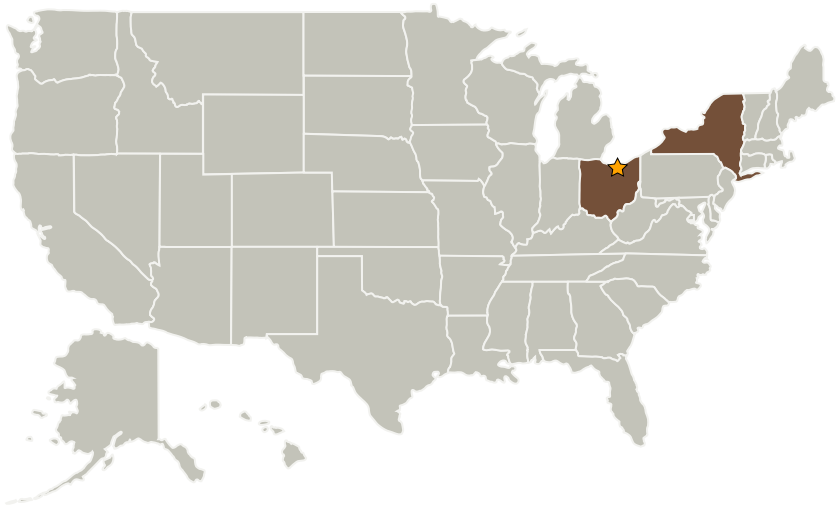
Three-Dimensional Optical Coherence Tomography (3D OCT), Phase I

Completed Technology Project (2004 - 2004)

Project Introduction

Applied Science Innovations, Inc. proposes to develop a new tool of 3D optical coherence tomography (OCT) for cellular level imaging at video frame rates and dramatically reduced probe cross-section. Existing commercial OCT tools are focused in ophthalmology, where examination is external to the eye, the size of the probe is not important, and cellular level resolution is not required. The patent-pending 3D OCT will provide three-dimensional imaging in scattering media with improved resolution, depth of field, and minimal mechanical adjustment. The proposed approach is based on novel probe designs, original coherence scanning, and advanced signal processing. The flexible imaging probe will have dramatically reduced cross-section, compared to the existing systems, enabling the first ?3D camera through a needle? for functional imagery, including in-vivo histological examination. Phase I will include theoretical studies and implementation of a limited experimental prototype to arrive at the proof of concept. First generation packaged prototype will be developed in Phase II of the project and delivered to NASA Glenn Research Center for evaluation and field tests.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Applied Science Innovations, Inc.	Supporting Organization	Industry	Troy, New York

Primary U.S. Work Locations	
New York	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Mikhail Gutin

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.5 Electrical Machines